

modifying the plurality of generated lines by adding in the plurality of lines at least one line, or moving at least one of the lines so that the plurality of lines still represent contours of the three-dimensional form model

### REMARKS

In response to the Office Action dated July, 3, 2001, claim 46 is added. Claims 2, 3, 5, 9-22, 29, 34, 35 and 37-45 are now active in this application. No new matter has been added.

The indication that claims 9-22 and 37 are allowable is acknowledged and appreciated.

### REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

Claims 38-40 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. In particular, the Examiner contends that the specification discloses generating data for a model, but does not teach generating data for just a portion or portions of the model.

The rejection is respectfully traversed.

In Figs. 9a to 9c, a snowman TM1 is defined by three-dimensional data DT1. Data on curve group BCG2 is defined as three-dimensional form data DT2 (see page 17, lines 5-8), and data on curve group BCG3 is defined as three-dimensional form data DT3 (see page 26, lines 7-9). As illustrated clearly in Figs. 9A to 9C, the curve groups BCG2 and

BCG3 represent *only a portion of the model* TM1. The form data TM3 has an amount of data smaller than that of the three-dimensional form data TM1 (see page 9, lines 11-13). Thus, the specification describes that data TD2 and TD3 are generated as data only on a portion smaller than model TM1.

The Examiner should also be aware that the disclosure need not recite the claim language in *haec verba*. *In re Smith*, 481 F.2d 910, 178 USPQ 620 (CCPA 1973).

In view of the above, withdrawal of the rejection is respectfully solicited as the subject matter (of claims 38-40) was described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

### **REJECTION OF CLAIMS UNDER 35 U.S.C. § 103**

Claims 29, 2, 54, 34, 35 and 38-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato et al. (USPN 5,754,680 (hereinafter, Sato)).

The Examiner contends that Sato discloses generating a plurality of lines along a surface of the three dimensional form at column 5, lines 41-44, but admits that Sato does not disclose modifying the plurality of generate lines. However, the Examiner maintains that Sato discloses modifying patches on the model and reducing the number of nodal data, the patches being defined by latitudinal and longitudinal lines. Thus, the Examiner asserts that it would have been obvious to a person of ordinary skill in the art to adjust the lines defining the patches to change the size of the patch.

Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato in view of Letcher, Jr. , which the Examiner relies upon to teach defining control points and moving the control points along the surface of a model (col. 16, lines 29-40).

The rejections are respectfully traversed.

Sato describes approximation of a slit light at declination angle theta as a linear sequence. The end points of the linear sequence are converted to three-dimensional coordinates, and the coordinates at the end points are defined as nodal points. Triangular patches are generated by connecting the nodal points. A surface model is made of a set of the triangular patches (column 1, lines 24-55). The surface model corresponds to the three-dimensional model of claim 29.

In independent claim 29, a plurality of lines are generated along a surface of the three-dimensional form model, the plurality of generated lines representing contours of the three-dimensional form model. However, Sato generates no data except the surface model of a set of triangular patches.

At steps S3-S7 in Sato, the plane patch generator 105 connects vertices of areas having the same normal orientation data and produces plane patches. However, this is quite different from the generation of the lines recited in claim 29. Because the surface model itself is represented as a set of plane patches, the generation of plane patches in step S7 *means modification of the surface model*. On the contrary, in claim 29, the generated lines extend only along the model, or they are different from the model itself. Therefore, after the modification, the modified lines still represent the contour of the model. Thus, claim 29, and claims 2, 3, 5, 34 and 35 depending from claim 29, are patentable over Sato.

As to claim 38, as mentioned above, Sato generates a surface model as a set of plane patches. Then, by integrating the plane patches in a certain area, the amount of data is decreased.

Therefore, Sato has only two models (data): A surface model (three-dimensional model) generated by measurement, and another surface model (three-dimensional model) generated by integration plane patches.

Further, a relationship between the Sato's two models is different from those in claim 38 between the first and second data and between the first and third data. that is, the second and third data of claim 38 represent a portion of the model represented by the first data. On the contrary, the second model data in Sato is provided by modifying the model represented by the first model data. Thus, claim 38, and claims 39 and 40 depending from claim 38, are patentable over Sato.

Consequently, the allowance of claims 29, 2, 3, 5, 34, 35 and 38-40 is respectfully solicited.

### **NEW CLAIM**

New claim 45 is added, and is derived from claim 29, by deleting the limitation of "deleting at least one of the lines". New claim 45 is also patentable over Sato for reasons similar to those explained above with respect to claim 29. Furthermore, it is to be noted that Sato cannot add or remove anything because a new plane patch is generated by integrating plane patches in an area. Only plane patches subjected to integration vanish.

CONCLUSION

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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